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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/970,294	10/02/2001	Gary K. Michelson	101.0070-02000	2538
22882	7590	07/13/2004	EXAMINER	
MARTIN & FERRARO, LLP 1557 LAKE O'PINES STREET, NE HARTVILLE, OH 44632			PRIDY, MICHAEL B	
			ART UNIT	PAPER NUMBER
			3732	

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/970,294

Applicant(s)

MICHELSON, GARY K.

Examiner

Michael B Priddy

Art Unit

3732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 91-135 and 139-202 is/are pending in the application.
- 4a) Of the above claim(s) 158, 165 and 166 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 91-135, 139-153 and 184-202 is/are allowed.
- 6) ☒ Claim(s) 154, 156-162, 164 and 167-181 is/are rejected.
- 7) ☒ Claim(s) 155, 163, 182 and 183 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

Claims 91 and 130 are generic and allowable. Accordingly, the restriction requirement as to the encompassed species is hereby withdrawn and claims 96, 103-108, 111-113, 144 and 145, directed to the species of Figs. 1A-1D, 2A, 2B, 6, 7A, 7B & 8-12, no longer withdrawn from consideration since all of the claims to this species depend from or otherwise include each of the limitations of an allowed generic claim. However, claims 158, 165 and 166, directed to the species of Fig. 1A-1D and 8-10, remain withdrawn from consideration since they do not depend upon or otherwise include all the limitations of an allowed generic claim as required by 37 CFR 1.141.

In view of the above noted withdrawal of the restriction requirement as to the linked species, applicant(s) are advised that if any claim(s) depending from or including all the limitations of the allowable generic linking claim(s) be presented in a continuation or divisional application, such claims may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Claim 154 links inventions I, II, VII and IX. The restriction requirement between the linked inventions is subject to the nonallowance of the linking claim, claim 154. Upon the allowance of the linking claim(s), the restriction requirement as to the linked

Art Unit: 3732

inventions shall be withdrawn and any claim(s) depending from or otherwise including all the limitations of the allowable linking claim(s) will be entitled to examination in the instant application. Applicant(s) are advised that if any such claim(s) depending from or including all the limitations of the allowable linking claim(s) is/are presented in a continuation or divisional application, the claims of the continuation or divisional application may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Where a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 154, 156, 157, 159, 161, 162, 164, 168, 170-172 and 179-181 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grooms et al. (U.S. 6,045,554) in view of Greenslade (U.S. 5,088,869). Grooms et al. teaches a screw formed of cortical bone for use in the human body, said screw comprising a leading end, a trailing end opposite said leading end, and a shaft therebetween, said shaft having a mid-longitudinal axis, a length and a thread extending from said shaft along at least a portion of its length; said thread configured to cooperatively engage at least a portion of the screw hole of an implant so as to prevent said screw from linear motion along the mid-longitudinal axis of said shaft in a direction opposite to the direction of insertion

when said screw is threaded through a screw hole to attach the implant to a bone portion of the human body; said screw being formed substantially of cortical bone of a single thickness ("cortical sections are removed from linear aspects of the femur or from the anterior cortex of the tibia"-- column 4, lines 25&26); wherein said thread has a plurality of turns and all of said turns include said concavely arcuate portion (the Examiner selects the three turns having concavely arcuate portions illustrated in Fig. 1 as the plurality of turns and all of these include said concavely arcuate portion). As set forth in lines 34-36 of column 3, "the head may have a machined, recessed Allen-wrench, star headed driver, Phillips head or slotted head purchase for torque application." Concerning the limitations of claim 179, it should be noted that Grooms et al. teaches screws of their invention being "placed with a custom socket driver".

Grooms et al. therefore teaches all of the limitations of the present invention except said shaft having a cross section transverse to said mid-longitudinal axis, said shaft having a cross section transverse to said mid-longitudinal axis through said thread having a concavely arcuate portion and a convexedly arcuate portion opposite said concavely arcuate portion, said cross section bisecting a rotation of said thread; further comprising an enlarged portion proximate said trailing end with a dimension transverse to the mid-longitudinal axis of said shaft greater than said outer diameter of said thread, said enlarged portion configured to prevent said trailing end from passing through the screw hole in the implant; wherein said enlarged portion forms a lip, and said enlarged portion including a concavely arcuate portion in said cross section transverse to the mid-longitudinal axis of said shaft.

Art Unit: 3732

Greenslade teaches a thread rolling screw having a shaft 17 with a mid-longitudinal axis, said shaft having a cross section transverse to said mid-longitudinal axis through thread 21b having a concavely arcuate portion 27 and a convexedly arcuate portion 25 opposite said concavely arcuate portion 27, said cross section bisecting a rotation of said thread 21b; said screw further comprises an enlarged portion proximate said trailing end with a dimension transverse to the mid-longitudinal axis of said shaft greater than said outer diameter of said thread, said enlarged portion configured to prevent said trailing end from passing through the screw hole in the implant wherein said enlarged portion forms a lip (see marked up copy of Fig. 1 in Exhibit B). Recessed areas on the crest of screw threads allow for reduced torque while installing the fastener. It would have been obvious to one of ordinary skill in the art at the time of the present invention to form concavely arcuate portions or relieved areas on the thread of Grooms et al. to reduce the torque required while installing the fastener in the human body.

The combination as taught by Grooms et al. in view of Greensdale teaches all of the limitations said enlarged portion including a concavely arcuate portion in said cross section transverse to the mid-longitudinal axis of said shaft. It would have been an obvious matter of design choice to one skilled in the art at the time the invention was made to construct the enlarged portion such that it included a concavely arcuate portion in said cross section transverse to the mid-longitudinal axis of said shaft, since applicant has not disclosed that such solve any stated problem or is anything more than one of numerous shapes or configurations a person ordinary skill in the art would find

Art Unit: 3732

obvious for the purpose of providing a forming edge in the heating portion or clamp. In re Dailey and Eilers, 149 USPQ 47 (1966).

Claim 160 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grooms et al. and Greensdale as applied to claim 154 above, and further in view of Huebner (U.S. 6,030,162). Grooms et al. and Greensdale teach all of the limitations of the present invention except said trailing end including a second thread having a different thread pitch than said thread along said shaft; wherein the thread pitch of said second thread is similar to a metal screw pitch and the thread pitch of said thread along said shaft is similar to a wood screw pitch.

Huebner teaches an axial tension screw having a trailing end said trailing end having a second thread 826 having a different thread pitch than said thread 824 along said shaft; wherein the thread pitch of said second thread 826 is similar to a metal screw pitch and the thread pitch of said thread 824 along said shaft is similar to a wood screw pitch. Such a thread configuration allows that "as the screw moves forward, axial compression is generated along the length of the root" which will result in "bone fragments (are) being drawn together". It would have been obvious to one of ordinary skill in the art at the time of the present invention to modify the thread of the combination such that the pitch of the thread along the shaft was less than that of the second thread to produce axial compression to draw fragments of bone together. It would also have been obvious to one of ordinary skill in the art at the time of the present

Art Unit: 3732

invention to form an enlarged portion on the trailing end of the screw of the combination so that "the screw may serve as an anchor to hold down a plate."

Claim 167 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grooms et al. and Greenslade as applied to claim 154 above, and further in view of Schenk (U.S. 6,048,344). Grooms et al. and Greenslade teach all of the limitations of the present invention except a tip of said leading end is fluted.

Schenk teaches a bone screw 60 having flutes 70 at its distal tip to permit the screw to be inserted without pre-drilling or tapping. It would have been obvious to one of ordinary skill in the art at the time of the present invention to provide flutes on the tip of the screw of the combination of Grooms et al. and Greenslade to allow insertion of the screw without pre-drilling or tapping.

Claim 169 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grooms et al. as applied to claims 154 and 157 above, and further in view of the following. Grooms et al. discloses the claimed invention except for the cortical bone being obtained from a generally intramembraneously formed cortical bone. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the screw of Grooms et al. of cortical bone obtained from a generally intramembraneously formed cortical bone, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.



Claims 173 and 176-178 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grooms et al. and Greenslade as applied to claims 91 and 94 above, and further in view of Klardie et al. (U.S. 6,048,204). Grooms et al. and Greenslade teach all of the limitations of the present invention except the screw being comprised of hydroxyapatite.

Klardie et al. teaches a self tapping screw type dental implant formed of titanium alloys or pure titanium but which may be coated with a material to facilitate healing and/or bone growth. "The outer surfaces of the implant may be coated with hydroxyapatite." (lines 32-34 of column 6) It would have been obvious to one of skill in the art to treat or coat the screw of the combination taught by Grooms et al. and Greenslade with hydroxyapatite to facilitate healing and/or bone growth.

Claims 174 and 175 are rejected under 35 U.S.C. 102(b) as being anticipated by Gogolewski et al. (U.S. 5,275,601). Gogolewski et al. teaches a screw 10 formed of resorbable polymers as set forth in Table 1 in column 4 for use in the human body, said screw 10 comprising: a leading end 2, a trailing end 4 opposite said leading end 2, and a shaft 1 therebetween, said shaft 1 having a mid-longitudinal axis a length and a thread 5 extending from said shaft 1 along at least a portion of its length.

Gogolewski et al. therefore teaches all of the limitations of the present invention except said shaft having a cross section transverse to said mid-longitudinal axis, said shaft having a cross section transverse to said mid-longitudinal axis through said thread

having a concavely arcuate portion and a convexedly arcuate portion opposite said concavely arcuate portion, said cross section bisecting a rotation of said thread.

Greenslade teaches a thread rolling screw having a shaft 17 with a mid-longitudinal axis, said shaft having a cross section transverse to said mid-longitudinal axis through thread 21b having a concavely arcuate portion 27 and a convexedly arcuate portion 25 opposite said concavely arcuate portion 27, said cross section bisecting a rotation of said thread 21b. Recessed areas on the crest of screw threads allow for reduced torque while installing the fastener. It would have been obvious to one of ordinary skill in the art at the time of the present invention to form concavely arcuate portions or relieved areas on the thread of Gogolewski et al. to reduce the torque required while installing the fastener in the human body.

#### ***Allowable Subject Matter***

Claims 155, 163, 182 and 183 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 91-135, 139-153 and 184-202 are allowed.

#### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 3732

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Priddy whose telephone number is (703) 308-8620. The examiner can normally be reached on Mon.-Fri. 8 a.m. - 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Shaver can be reached on (703) 308-2582. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

Michael B. Priddy  
*Michael B. Priddy*  
July 7, 2004

*Kevin Shaver*  
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